Natural disasters, PC supply chain and corporate performance

Article (Supplemental Material)

Table 1: Summary statistics

Variables/Observations	Whole Sample	Japanese Earthquake-Tsunami		Thai Flood	
		Before	After	Before	After
Panel A: End Assemblers					
Sales ratio	0.324	0.344	0.315	0.336	0.315
	(0.126)	(0.127)	(0.125)	(0.127)	(0.126)
Inventory turnover	3.453	3.632	3.371	3.596	3.342
	(1.961)	(1.890)	(1.995)	(1.926)	(1.991)
No. of observations	160	50	110	70	90
Panel B: Suppliers					
Sales ratio	0.185	0.201	0.178	0.197	0.176
	(0.100)	(0.112)	(0.094)	(0.106)	(0.094)
Inventory turnover	1.552	1.743	1.466	1.659	1.470
	(1.012)	(1.093)	(0.964)	(1.059)	(0.970)
No. of observations	208	65	143	91	117

Note: The numbers are the mean with standard deviation in brackets. Ratio refers to the variable being a ratio of total assets.

Table 2: Results on the influence of Natural Disasters

	Dependent Variable: End Assemblers' Sales ratio		
	(1) Both events	(2) Pre-Thai Flood: 1Q After JET	(3) Pre-Thai Flood: 2Q After JET
JET	-0.023***	-0.025***	-0.014***
	(0.009)	(0.009)	(0.005)
TF	0.00001	-	-
	(0.009)		
Time Trend X Fixed Effects	Yes	Yes	Yes
Number of Observations	160	60	70
Wald χ^2	635.71***	343.08***	423.25***
R^2	0.812	0.880	0.880

Note: ***, **, * indicate that the coefficient is significant at the 1, 5, and 10% levels, respectively. Clustered robust standard errors in parentheses. JET stands for Japanese earthquake-tsunami and TF stands for Thai flood. Columns (2) and (3) show the effect one and two quarters after JET respectively.

Table 3: Results on moderating role of supply chain flexibility

	Dependent Variable: End Assemblers' Sales ratio				
	End Assemblers	*Suppliers*			
	Overall	*Overall*	*Individual Components*		
	(1) Above Average Inventory turnover	(2) Suppliers' inventory turnover	(3) Disk drive	(4) Motherboard	(5) Chip & CPU
JET	-0.023***	0.144	0.688**	0.038	-2.465*
	(0.006)	(0.088)	(0.297)	(0.036)	(1.509)
TF	0.00001	-0.153*	-0.449	-0.091**	2.516*
	(0.009)	(0.085)	(0.296)	(0.038)	(1.531)
Explanatory	-0.002**	0.001	0.118**	-0.004	0.011
	(0.001)	(0.029)	(0.055)	(0.224)	(0.028)
Explanatory x *JET*	0.001**	-0.107*	-0.312**	-0.029*	1.910*
	(0.001)	(0.057)	(0.134)	(0.017)	(1.180)
Explanatory x *TF*	-0.0003***	0.099*	0.206	0.047**	-1.950*
	(0.0001)	(0.059)	(0.140)	(0.218)	(1.183)
Time Trend X Fixed Effects	Yes	Yes	Yes	Yes	Yes
Number of Observations	160	160	160	160	160
Wald χ^2	686.81***	629.68***	632.12***	632.17***	634.26***
R^2	0.827	0.814	0.815	0.815	0.815

Note: ***, **, * indicate that the coefficient is significant at the 1, 5, and 10% levels, respectively. Clustered robust standard errors in parentheses. JET stands for Japanese earthquake-tsunami and TF for stands Thai flood. All *explanatory* variables are based on inventory turnover, with the second regression using a *weighted* measure. Suppliers' variables are averaged to represent *average* supplier as facing the end assemblers.

Table 4: Results on mediating role of suppliers (vs. moderation)

	Dependent Variable: End Assemblers' Sales ratio		
	(1) Suppliers' Sales ratio	(2) (1) + Controlled for disasters	(3) (1) + Moderation
JET	0.002	0.002	1.343**
	(0.011)	(0.011)	(0.587)
TF	-0.005	-0.031***	-0.922**
	(0.009)	(0.010)	(0.460)
Suppliers' sales ratio	*1.393****	*0.163*	*3.592***
	(0.438)	*(0.635)*	*(1.424)*
Suppliers' sales ratio residuals	-	*1.916***	-
		(0.893)	
Suppliers' sales ratio x *JET*	-	-	*-7.099***
			(0.164)
Suppliers' sales ratio x *TF*	-	-	*5.047***
			(2.561)
Time Trend X Fixed Effects	Yes	Yes	Yes
Number of Observations	160	160	160
Wald χ^2	642.33***	646.42***	649.22***
R^2	0.815	0.817	0.819

Note: ***, **, * indicate that the coefficient is significant at the 1, 5, and 10% levels, respectively. Clustered robust standard errors in parentheses. The first suppliers' *explanatory* variable is an *average weighted* sales ratio, with the second variable in the second specification being the same measure but controlled of the influence of the natural disasters. Column (3), reported for comparative purposes, shows the moderating influence as in Table 3 but now with sales ratio.

Table A.1: Variables description and data sources

Variable Name	Description	Source
Dependent variable(s): Sales ratio	Sales as a ratio of total assets (with original variables both being in US$ millions)	Quarterly reports of companies between 2010Q1-2013Q4.
Independent variables: Japanese Earthquake-Tsunami (JET)	Dummy to identify time before and after JET taking value of 1 after and 0 before	-
Thai Flood (TF)	Dummy to identify time before and after TF taking value of 1 after and 0 before	-
Above average Inventory turnover	Cost of sales as a ratio to Inventory. Above average inventory is constructed by subtracting the industry's average inventory turnover	Quarterly reports of companies for 2009Q4-2013Q3
Suppliers' average sales ratio/inventory turnover	We constructed several variables: - Overall suppliers' weighted suppliers' sales ratio/inventory turnover (see text) - Individual component suppliers' sales ratio/inventory turnover	Quarterly reports of companies for 2009Q4-2013Q3

Notes: 1) Most independent variables are lagged by one period with respect to the regressand. If the variable is unavailable we use two period lags. 2) Some reports that use the local currency for the accounting variables were converted to US $ first and scaled to US $ millions. 3) For our purposes we also created interactive terms, not reported above, between several explanatory variables and the two events dummies.

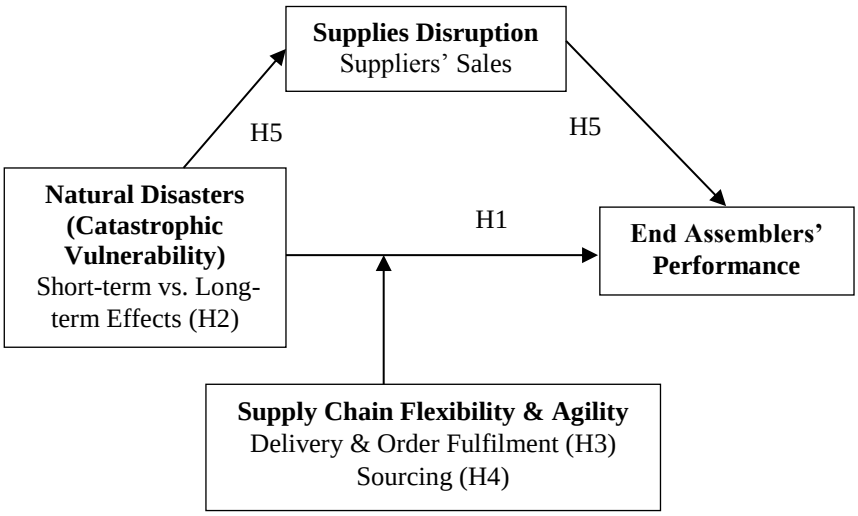

Figure 1: Natural Disasters-Flexibility, Agility & Disruption-Performance framework

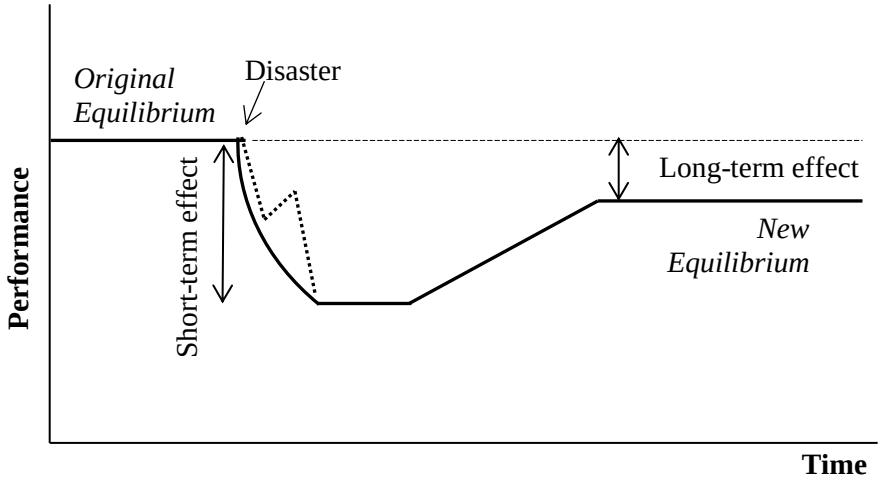

Figure 2. Short-term and Long-term Effects